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57. The method of claim 50, further comprising the step of splitting a free end of the bristle in the preferred breaking region in a longitudinal direction.
58. The method of claim 57, wherein the step of splitting comprises subjecting the free end to a mechanical load.
59. The method as claimed in claim 57, wherein the step of splitting comprises end-rounding the free end of the bristle.
60. The method as claimed in claim 50, further comprising the step of end-rounding a free end of the bristle.
61. The method as claimed in claim 55, wherein the step of twisting further comprises drawing the monofilament from a rotating central reel.
62. The method as claimed in claim 55, wherein the step of twisting further comprises drawing the monofilament from a stationary central reel through a rotating nozzle.

REMARKS

This application originated in Germany, and this Third Preliminary Amendment is believed to place the claims in a form that is more consistent with practice in the U.S. Patent and Trademark Office, to advance the prosecution, and to secure applicants' rights in the invention. Appreciation is expressed for Examiner's having telephoned the undersigned on January 23, 2002 to suggest the clarifying change to the preambles of each of the independent claims (24, 50) to put the application in better form so as to recite a toothbrush including a bristle and a bristle carrier. Support is in the specification at e.g. page 12, lines 10-11. Accordingly, the preambles of the dependent claims 25-49 are amended simply to conform with the preamble of the independent claim 24.

Claims 24-62 are presented, apparatus claim 24 and method claim 50 being independent. Claims 24-49 are apparatus claims, 50-62 are method claims. Claims 24-50 are amended, and unamended claims 51-62 are reproduced above for the sake of convenience.

Advantages of the present invention, as has been pointed out in the Second Preliminary Amendment, are seen in that the free end of a bristle constructed according to the disclosed embodiments can be slit or split to create high-surface-area teeth-cleaning bristle-lets without complicated equipment or extra processing steps such as slitting tools, rather, the zones define a pre-selected breaking region between them that allows a simple mechanical bristle end-rounding ("grinding/polishing") or beating to splay the bristle ends, as described in the specification at page 2, last paragraph.

A list relating the present claims to the claims as-filed was provided in the Second Preliminary Amendment. It is again noted, for exemplary purposes, the embodiment discussed in relation to Figures 1a,b, 2a,b relates to features of at least claims 24-26 and 28-42. In particular, with regard to claim 32 (original claim 4), not only is reference made to the extrusion die at Fig. 2a, but also to the text describing Fig. 1a,b at page 8, lines 4-10 (and also to Fig. 2b).

Claim 45 is directed to the feature that the cavity (referred to in claim 27) contains a plastic material introduced into the space defining the cavity. Claim 45 is written dependent on claim 27. It is noted that the subject of claims 45-47 is discussed in the text at e.g. page 10, lines 16-20, which describes that the boundary defining the cavity can, in certain embodiments, be filled with the introduced plastic, and that the plastic can be a plastic different from the plastic that forms the boundary walls of the cavity, the interface between different plastics refused from the melt stream resulting in a pre-selected region of breakage due to a weaker bond strength at the

interface than if they were melt streams of the same material.

If a telephone conference would helpfully advance prosecution, the Examiner is invited to telephone the undersigned at 617-421-7939.

Please apply any charges or credits to Deposit Account No. 07-1350.

Respectfully submitted,



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APPENDIX

Marked-Up Claims showing underlined additions and bracketed deletions

--24. (Amended). A toothbrush bristle and a bristle carrier together forming a toothbrush, said bristle comprising a plastic monofilament defining in a cross-sectional area thereof at least first and second adjoining zones and at least one region of preferred breaking between said first and second zones.

25. (Amended). The toothbrush [bristle] as claimed in claim 24, wherein the first zone comprises a first plastic material and the second zone comprises a second plastic material, and wherein said first plastic material differs from said second plastic material.

26. (Amended). The toothbrush [bristle] as claimed in claim 24, wherein the first zone and second zones each comprise a first plastic material.

27. (Amended). The toothbrush [bristle] as claimed in claim 24, wherein at least one said zone defines a cavity.

28. (Amended). The toothbrush [bristle] as claimed in claim 24, wherein at least one said zone comprises at least one filler material.

29. (Amended). The toothbrush [bristle] as claimed in claim 28, wherein adjacent said zones comprise different filler materials.

30. (Amended). The toothbrush [bristle] as claimed in claim 24, wherein at least one said zone comprises a colorant.

31. (Amended). The toothbrush [bristle] as claimed in claim 24, wherein adjacent said zones comprise different colorants.

32. (Amended). The toothbrush [bristle] as claimed in claim 24, wherein the region of preferred breaking is a re-fused region of plastic extrudate defined at an interface between adjacent said zones.

33. (Amended). The toothbrush [bristle] as claimed in claim 24, wherein said zones are arranged in approximately mirror symmetry with an axis of the bristle.

34. (Amended). The toothbrush [bristle] as claimed in claim 24, wherein said zones are arranged approximately in point symmetry with an axis of the bristle.

35. (Amended). The toothbrush [bristle] as claimed in claim 24, wherein said first and second zones each occupy approximately equal portions of the cross-sectional area.

36. (Amended). The toothbrush [bristle] as claimed in claim 24, wherein a free end of the bristle is split over the preferred breaking region directed along a longitudinal axis of the bristle.

37. (Amended). The toothbrush [bristle] as claimed in claim 36, wherein the split region extends between approximately 10% and approximately 25% of a length of the bristle.

38. (Amended). The toothbrush [bristle] as claimed in claim 24, wherein a free end of the bristle is rounded.

39. (Amended). The toothbrush [bristle] as claimed in claim 24, wherein the bristle comprises a plastic selected from a group of plastics consisting of polyester, polyamide and mixtures thereof.

40. (Amended). The toothbrush [bristle] as claimed in claim 24, wherein a major lateral dimension of the cross-sectional area of the monofilament is between 0.1 mm and 0.25 mm.

41. (Amended). The toothbrush [bristle] as claimed in claim 40, wherein the lateral dimension is between 0.15 mm and 0.18 mm.

42. (Amended). The toothbrush [bristle] as claimed in claim 40, wherein the lateral dimension is a diameter.

43. (Amended). The toothbrush [bristle] as claimed in claim 24, wherein the cross-sectional area comprises a shape selected from a group of shapes consisting of a three-leaf clover, a multiple-leaf clover, a three-point star and a multiple-point star.

44. (Amended). The toothbrush [bristle] as claimed in claim 24, wherein a circumferential surface of the monofilament has a helical structure.

45. (Amended). The toothbrush [bristle] as claimed in claim 27, further comprising a second plastic material contained within said cavity and extending across at least a portion of a cross-sectional area of the cavity.

46. (Amended). The toothbrush [bristle] as claimed in claim 45, wherein said second plastic material fills the cross-sectional area of the cavity.

47. (Amended). The toothbrush [bristle] as claimed in claim 45, wherein said second plastic material is different from a plastic material defining a portion of a boundary of said cavity.

48. (Amended). The toothbrush [bristle] as claimed in claim 24, wherein said region of preferred breaking is at least partially defined by a void adjacent said first and second zones.

49. (Amended). The toothbrush [bristle] as claimed in claim 24, wherein said region of preferred breaking is at least partially defined by at least one indentation on an exterior surface of said bristle at a location adjacent said first and second zones.

50. (Amended). A method of manufacturing a toothbrush having a toothbrush bristle, comprising the steps of

forming a plastic monofilament having a cross-sectional area,

forming a first zone disposed over a first portion of said cross-sectional area,

forming a second zone disposed over a second portion of said cross-sectional area adjacent said first portion, [and]

forming an interface between adjoining said first and second zones to define a region of preferred breaking along which said first and second zone are frangible,

providing a bristle carrier, and

mounting an end of the bristle to the bristle carrier.